

Earth & Space Sciences Recent Outreach

SAGE...New Trend in Geophysical Education



The Summer of Applied Geophysical Experience (SAGE) is a unique program designated to introduce geophysics students to geophysical exploration and research. Its purpose is to enhance a student's knowledge by going beyond a standard classroom-based geophysics curriculum, and to encourage qualified students in related fields to consider careers in geophysics. The course focuses the student's preparation and experience on geological problems of research and practical interest. Students combine geophysical data, acquired using a variety of techniques, with knowledge of the geological setting to derive integrated subsurface interpretations. Processing and modeling of geophysical data are PC and workstation-based, using state-of-the-art software. Modern field equipment and vehicles are provided by various academic institutions and industrial affiliates. The SAGE faculty consists of active, dedicated, and experienced researchers. Students are predominantly upper division or graduate students in geophysics or related disciplines from a variety of U.S. and foreign institutions, and professionals from various earth science fields. SAGE has operated in the Rio Grande rift in New Mexico since 1983.

No Kidding, LASSO Promotes Space Science

Each year Los Alamos holds a Summer Teachers' Workshop, Los Alamos Space Science Outreach (LASSO) in which staff members from ISR-1 and -2 (and a few other groups) talk to teachers around the state about a variety of space science disciplines. The 2007 event is underway at Española Valley Middle School East through July 27.



LASSO features on-going NASA projects that include Los Alamos National Laboratory science instrumentation and personnel. The educational component for the combined projects includes a teacher enhancement program that involves teachers from grades 4-12 in the process of designing and creating space science lessons for inclusion in an on-line Space Science Activity book. Built around multiple space science projects conducted at Los Alamos National Lab, participant teachers will examine the issues and sciences involved in these complex projects. They will examine sciences involved in exploring our solar system, interact with Los Alamos National Laboratory personnel and participate in the development of space science activities for distribution via the World Wide Web. This program is a collaborative effort between the Education Program Office, the Center for Space Science and Exploration and the space science groups of Los Alamos National Laboratory and the National Aeronautical and Space Administration.

Earthwatch

The Earthwatch Institute engages people worldwide in scientific field research and education to promote the understanding and action necessary for a sustainable environment. Earthwatch believes that teaching and promoting scientific literacy is the best way to systematically approach and solve the many complex environmental and social issues facing society today. EES works with the "Tectonics and Volcanism of the Rio Grande Rift" Expedition.

<http://www.earthwatch.org/> Aviva Sussman and Emily-Schultz-Fellenz run expeditions every summer for teenagers.

Science Education Institute of the Southwest (SEIS) Summer Course

The mission of the Science Education Institute of the Southwest is to promote advancement in the teaching and learning of science by: Providing high quality professional development and research opportunities for K-12 educators; Building a network of educators to support best teaching practices and intellectual growth; Facilitating partnerships and community involvement to promote high quality science education; Collecting data and publishing results on the effectiveness of SEIS activities. EES runs a course called: The Valles Caldera: A Tuff Act to Follow. <http://www.seisinstitute.org/about/mission.html>

DOE Academies Creating Teacher-Scientist (ACTS) Program

The Los Alamos Earth and Space Science Academy program is a professional development experience designed for teachers working at the high school and middle school levels. The program is delivered as one site for the US Department of Energy Office of Science Academies Creating Teacher Scientists (ACTS) program.

http://www.scied.science.doe.gov/scied/ACTS/programs/LANL_TAI.html EES-17 scientist Aviva Sussman ran the program last year and this year for 14 teachers.

Expanding Your Horizons

Like the national network model, Northern New Mexico EYH's mission is "to encourage young women to pursue science, technology, engineering and mathematics (STEM) careers. Through Expanding Your Horizons (EYH) Network programs, we provide STEM role models and hands-on activities for middle and high school girls. Our ultimate goal is to motivate girls to become innovative and creative thinkers ready to meet 21st Century challenges. <http://www.expandingyourhorizons.org/> Aviva Sussman (EES-17) organized the events for over 400 girls over the last three years.



High School Students Learn About Nuclear Science from EES-12 Scientists

Carlsbad High School students learned about nuclear science from Jef Lucchini, an actinide chemist with the EES-12 Actinide Chemistry and Repository Science Program (ACRSP), and others affiliated with the Waste Isolation Pilot Plant (WIPP). The Carlsbad High School nuclear symposium is an outreach program, which Lucchini organized for the 4th year in a row in collaboration with science teachers and administration. The students attended lectures and toured the New Mexico State University Carlsbad Environmental Monitoring and Research Center (NMSU/CEMRC), where the ACRSP team works. Lucchini gave an overview about radioactivity and nuclear science, and other scientists from CEMRC, Sandia National Laboratory, and URS

Washington TRU Solutions, gave talks about background radiation effects, options for the end of the nuclear fuel cycle, and the importance of education in a professional career. The American Nuclear Society, Carlsbad chapter offered scholarships to the two seniors who received the best scores on a 20-question quiz about the information presented. The high quality and accuracy of the responses indicated that the students understood the major concepts of the educational event.

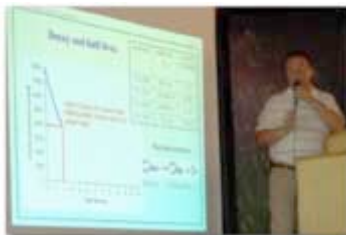


Photo: Jef Lucchini (EES-12) presents the concept of radioactive decay.

Energy and Environment are Topics in Café Scientifique Presentations

Bruce Robinson (EES-DO), Bill Tumas (SPO-AE), Cathy Wilson (EES-14), and Andy Wolfsberg (EES-16) interacted with New Mexico high school students in recent Café Scientifique meetings. The Café aims to get students to ponder local to global challenges and discuss how science can help address these big problems. The Café engages students in Española, Albuquerque, Santa Fe, and Los Alamos. Over the last few months the Café sessions have focused on energy and environment issues.



Photo: Bruce Robinson, Cathy Wilson, and Andy Wolfsberg.

Robinson spoke about nuclear energy and the challenge of assessing the risk of waste disposal options. Tumas discussed the future of cars and the science and engineering that are needed to make safe, affordable hydrogen powered vehicles. Wilson posed the question: "Where will our water come from as we face population growth and climate change?" Wolfsberg asked students to consider the social and engineering challenges of reducing our massive greenhouse gas emissions.

For more information, see www.cafenm.org.